



**João Ricardo Pereira
Ribeiro**

**Sustentabilidade e resiliência através da inovação
social e redes de cidadãos**

**Sustainability and resilience building through social
innovation and citizens networks**



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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Engenharia do Ambiente, realizada sob a orientação científica da Doutora Teresa Fidélis, Professora Auxiliar do Departamento de Ambiente e Ordenamento da Universidade de Aveiro

Dedico este trabalho à minha família pelo seu incansável apoio e trabalho de forma a darem-me oportunidades que não tiveram com a minha idade.

o júri

presidente

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agradecimentos

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palavras-chave

Sustentabilidade, governação, resiliência, inovação social, iniciativas de base

resumo

O presente trabalho tem como objectivo estudar a importância das redes de cidadãos na promoção da sustentabilidade e da resiliência das comunidades, focando-se principalmente nas forças motrizes e barreiras relativas a este tipo de iniciativas. O trabalho de investigação realizado nesta dissertação está integrado no projecto TRUST, Análise de iniciativas de inovação social para a sustentabilidade (PTDC/GES-AMB/28591/2017). Esta dissertação tem por objectivo explorar o conhecimento sobre redes de cidadãos e as formas de inovação social associadas, bem como o papel que pode desempenhar nos processos de transição para a sustentabilidade. Inclui ainda a análise do papel das redes de actores nesses processos e na avaliação do seu papel enquanto agentes de mudança dos sistemas socio ecológicos de pequena escala. O trabalho de investigação foi desenvolvido em três passos. Em primeiro lugar realizou-se uma pesquisa de artigos científicos publicados em plataformas como *Scopus* e *Web of Science*. Os artigos seleccionados serviram de base a uma breve revisão de literatura capaz de enquadrar os principais conceitos associados ao estudo e o conhecimento existente. Em segundo lugar, foram analisadas as principais características dos três casos de estudo de redes de cidadãos, designadamente o grupo de pescadoras da Murtosa, a Ciclaveiro e o Laboratório Cívico de Santiago. Em terceiro lugar, com o objectivo de identificar as forças motrizes e barreiras dos casos de estudo, foi aprofundada a análise usando uma matriz-questionário adoptada pelo Projecto TRUST. Como principais conclusões destacam-se os seguintes aspectos: o desenvolvimento de iniciativas como as ilustradas nos casos de estudo permite a promoção de inovação social, através da alteração de conhecimento e de comportamentos relevantes para a sustentabilidade nas comunidades. O desenvolvimento destas iniciativas nem sempre encontra nas entidades governativas locais abertura e mecanismos de suporte, constituindo frequentemente fontes de bloqueio. Apesar do potencial valor destas iniciativas a sua capacidade para gerar transformação depende muito da capacidade de os líderes transferirem e disseminarem o seu poder. Adicionalmente a comunicação entre iniciativas semelhantes reforça a robustez e durabilidade da inovação e da potencial transformação. A criação de pontes entre estas iniciativas e as entidades governamentais pode também contribuir para reforçar o potencial destas iniciativas facilitando a transição para comunidades mais sustentáveis e resilientes.

keywords

Sustainability, governance, resilience, social innovation, grassroots initiatives

abstract

This dissertation aims to study the importance of citizen networks in promoting the sustainability and resilience of communities, focusing mainly on the driving forces and barriers related to such initiatives. The research work carried out in this dissertation is part of the project TRUST, Analysis of social innovation initiatives for sustainability (PTDC / GES-AMB / 28591/2017). This work aims, to explore the knowledge about citizen networks and the associated forms of social innovation, as well as the role it can play in the transition to sustainability processes. It also includes analyzing the role of stakeholder networks in these processes and assessing their role as agents of change in small-scale socio-ecological systems. The research work was developed in three steps. Firstly, a search was made for scientific articles published on platforms such as *Scopus* and *Web of Science*. The selected articles were the basis of a brief literature review capable of framing the main concepts associated with the study and the existing knowledge. Secondly, the main characteristics of the three case studies of citizen networks were analyzed, namely the group of fisherwomen of Murtosa, Ciclaveiro and Santiago's Civic Laboratory. Thirdly, in order to identify the driving forces and barriers of the case studies, the analysis was deepened using a questionnaire matrix adopted by the TRUST Project. The main conclusions stand out as follows: The development of initiatives such as those illustrated in the case studies allows the promotion of social innovation through the alteration of knowledge and behaviors relevant to sustainability in communities. The development of these initiatives does not always find openness and support mechanisms in local government entities, the latter often being sources of blockade. Despite the potential value of these initiatives, their ability to bring about change depends greatly on the ability of leaders to transfer and disseminate their power. Additionally, communication between similar initiatives reinforces the robustness and durability of innovation and potential transformation. Bridging these initiatives with government agencies can also help strengthen the potential of such actions by facilitating the transition to more sustainable and resilient communities.

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1. Introduction

1.1. Background

In an age where resources are increasingly scarce, the notion that the world is made of complex, integrated systems in which humans are a part of nature and thus have an impact on it are known as social-ecological systems (SES's), a notion which has been receiving more and more attention. Sustainability is the study on how these systems function and remain in balance while providing human society with everything needed for our survival. In addition, pursuing sustainability is creating and also maintaining conditions in which humans and nature can co-exist in harmony, to support the present without compromising the ability of future generations to meet their own needs. Sustainability's three core areas were identified by the World Summit on Social Development in 2005, namely the economic – this is the area whose main focus is whether or not sustainability measures affect businesses, jobs and therefore employability (Keiner, 2006), then we have the social area, which most importantly tackles legislation protection as regards society's health, especially distinct forms of pollution and other harmful activities of business and other organisations (Keiner, 2006), and, finally, the environmental area that focuses on the protection of ecosystems while tackling the key elements that pressure the environment. It has come to a point where it is imperative that individuals or groups of individuals that are driven by a set of ideals and are in positions to make the introduction of new products, processes or programs, are able to change the basic routines, resource and authority flows of the multi-scale social system for innovation to occur in order to obtain a higher quality of life for society.

This dissertation is integrated in an FCT funded project entitled TRUST (social innovation sTRategies for sUSTainability transitions) whose overall objective is to explore the enabling conditions for sustainability transition (ST) initiatives, the extent to which such transitions support social innovation (SI), and the role of SI in generating transformative change, through actors' networks and agents of change. In order to do so, interviews were conducted in three different case studies, each one tackling a different issue: mobility, equal rights, and social inclusion, so that by studying these initiatives, it can be possible to determine blockades and possible ways to deal with them, as well as ways to help things move forward.

This dissertation focuses, therefore, on the importance of specific factors, such as governance, resilience and knowledge networks, and how they can enable the conditions for sustainability transition initiatives to occur.

1.2. Dissertation objectives

Resilience building and social innovation are subjects that are increasingly gaining importance in sustainability but there is still a lot to develop. The objective of the present dissertation is to show the importance of initiatives as factors that contribute towards sustainability and resilience in their respective communities, which is one of the main objectives of project TRUST. By the end of this dissertation, the following questions should have been answered:

- How can the role of actors' knowledge networks be enhanced to enable transition processes for sustainability?
- What are the main barriers for the case studies in Portugal? And the main drivers?

1.3. Methodological approach

The first stage of this research consists of presenting the “state of art”, i.e., a brief literature review on sustainability and its relationship with governance, knowledge networks, resilience and social innovation. This phase was undertaken after the search and analysis of scientific articles from databases such as “Scopus” and “Web of Science” in order to obtain an understanding of the research that has been previously made on the subjects and to identify possible problems and challenges that the authors have highlighted in the documents, and if possible, ways to overcome them.

The second stage consists of describing the main features of the case studies in question and the third stage of analysing them using the analytical framework adopted by the Project TRUST on the three case studies in order to assess their contributions for sustainability and resilience in their community. This analysis aimed at finding barriers and drivers for social innovation for sustainability. This stage was undertaken mainly by interviewing key members on each case study in order to obtain the

required information. The data collected was then assessed in the discussion and conclusions were equated.

1.4. Structure of the dissertation

The topics that will be addressed in this dissertation are as follows:

- In the first and introductory chapter, the importance of the subject of resilience and other subjects for the sustainable development are addressed. The chapter also aims to set the tone of what this dissertation expects to accomplish.
- The second chapter presents the literature review. This chapter consists of a study of the information that was gathered, mostly from scientific articles on the topics of sustainability, resilience, governance and social innovation.
- The third chapter describes the methodology adopted for the case study analysis and presents the results of this analysis. This chapter consists of the implementation of a framework to the case studies and their activities in order to assess their contributions to sustainability paths.
- The fourth chapter presents the discussion of the results that were obtained in the preceding chapters.
- Finally, the fifth chapter presents the conclusions and provides a few recommendations for future studies while highlighting limitations of this dissertation.

2. Literature Review

2.1. Introduction

In this chapter, firstly the methodology adopted to identify the main scientific articles used to undertake the literature review is put forward. Secondly, the results of the review are presented in three sections, namely governance and resilience, social innovation, as well as knowledge networks and grassroot initiatives.

2.2. Social innovation for sustainability and resilience in the scientific literature

This literature review consists of an analysis of scientific articles, from online databases, namely Scopus and Web of Science, concerning the subjects being studied. In favour of improving the results of the search and of bringing out the most important articles for this dissertation, the words used to undertake the search were the following:

- “Sustainability”,
- “Resilience”,
- “Governance”,
- “Knowledge Networks”,
- “Social Innovation”,
- “Sustainability” AND “Resilience”,
- “Sustainability” AND “Governance”,
- “Sustainability” AND “Social Innovation”,
- “Sustainability” AND “Knowledge Networks”.

When it comes to the subject of sustainability on its own, the results are considerably large with the total number of papers in 2017 being 12224 . The same was verified with resilience with 6058 and governance with 7970 as standalone keywords. However, when these terms were paired up with “social innovation”, and “knowledge networks”, the results were considerably lower, as can be observed on figure 1.

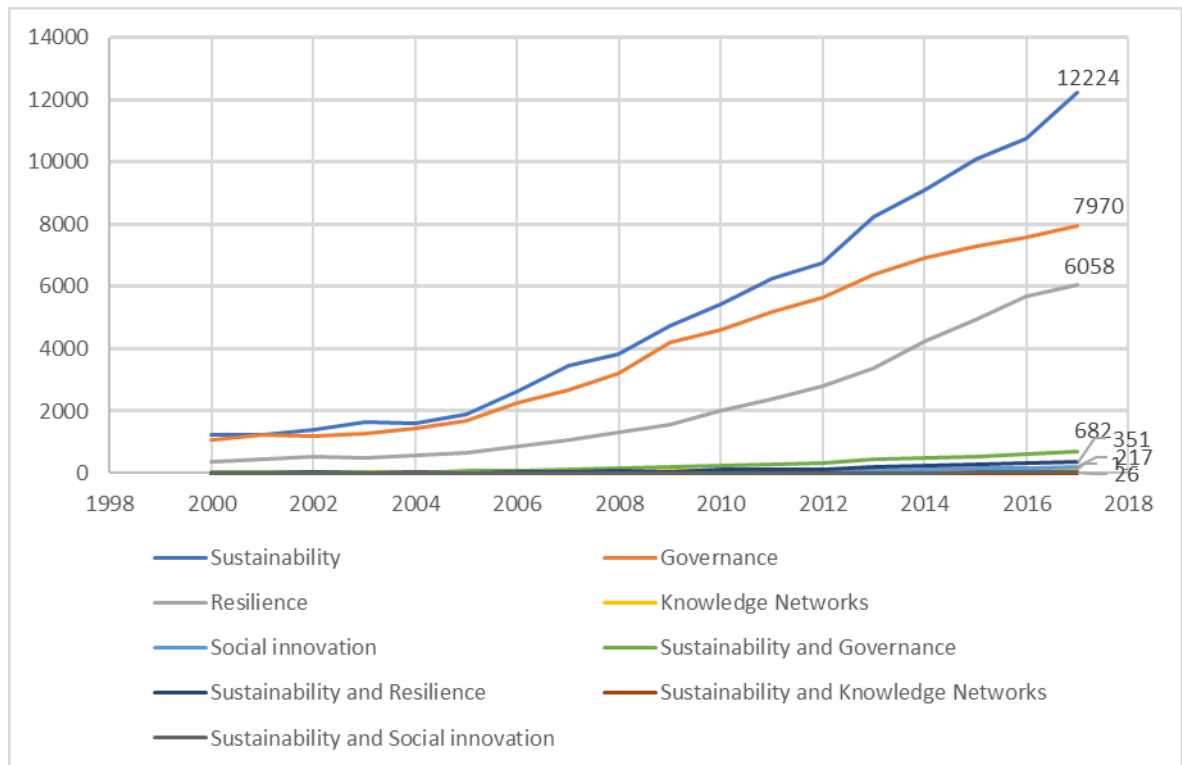


Figure 1 - Articles by keywords from Scopus database

In an attempt to obtain an evaluation on the state of art of the subject, an initial search was conducted for scientific articles on the online database (Scopus-13/10/2018) by searching for the topic of sustainability and then limiting the research area to environmental science.

2.2.1 Governance and Resilience

Governance is required when a group of individuals, civil society, and/or the state comes together to make decisions involving questions of economic efficiency, environmental effectiveness, equity, and political legitimacy. These four criteria are constitutive of the economic, social, and environmental dimensions of sustainable development, which has become the dominant rhetorical device of environmental governance. Therefore, we need to pay simultaneous consideration to the four criteria that test the problem-solving capabilities of most decision-makers worried with environmental governance and with sustainability (Adger et al., 2003). These three criteria are constitutive of the economic, social, and environmental dimensions of

sustainable development, which has become the dominant rhetorical device of environmental governance.

Kemp et al, (2005) state that governance is how one gets to act, through distinct types of interactions (deliberation, negotiation, self-regulation or authoritative choice) and the extent to which actors adhere to joint decisions (Kemp et al., 2005). The authors add that the significance of citizen involvement or stakeholder engagement is emphasized due to four main reasons: it enhances the legitimacy of policy, helps to reduce the risk of conflict, offers an additional source of ideas and information, and, through their involvement, people and organisations learn about environmental problems (Kemp et al., 2005). The authors also refer that the most substantial challenge is to ensure that multi-player governance regimes embody the capacity for sustainability-oriented coordination, direction and re-direction. Various ways to tackle this challenge include policy-making framework, that actively pursues to identify, nurture, and coordinate action for more sustainable technological niches (Kemp et al., 2005).

The value of cities as a means to address the challenge of sustainable development, as well as the concepts of sustainable cities and urban sustainability have earned significant (rhetorical) ground internationally. Local authorities and the urban areas which they govern are gradually charged with delivering sustainable development. The propensity for analyses of urban sustainability to focus on technocentric models and wish-lists of measures which should be introduced has meant that critical questions concerning the political struggles which take place in defining what urban sustainability might entail have been forgotten (Bulkeley & Betsill, 2005). Therefore, a growing number of bottom-up approaches to governance have emerged via groups of local actors, social networks, and various collaborations of community leaders, feeling the need for alternatives to top-down government and new approaches to environmental decision making (Chaffin, Gosnell, & Cosens, 2014).

Sustainability involves maintaining the functionality of a system when it is disturbed, or maintaining the elements needed to renew or restructure it if a disruption radically alters its structure and function. The ability to do this is termed "resilience" (Walker et al., 2002). In this paper, the authors present a type of framework in order to examine the resilience in SES (social-ecological systems). This framework is comprised of 4

steps, the first being the development of a conceptual model of the SES based on the stakeholder's inputs.

- The product of step 1 is a conceptual model embodying what is known about the system in terms of issues deemed important to the stakeholders, and what defines them. It provides a crucial heuristic basis for step 2 and (very importantly) it defines the "of what" part of the resilience analysis (Walker et al., 2002).
- In step 2 the external disturbances and the development processes are studied in order to develop a set of future scenarios. Walker et al. (2002) define a scenario as a plausible exploration of the future, to be used in combination with other scenarios to explore the sturdiness of diverse models and choices with a special attention to the role that scenarios have in formulating responses to unanticipated events (Walker et al., 2002).
- Step 3 consists of the exploration of the previous steps through a mixture of modelling and non-modelling methods, with the objective of identifying possible driving variables and processes in the system that govern the dynamics of the variables which stakeholders deem to be important (Walker et al., 2002).
- The final step involves an evaluation from the stakeholders of the entire process that then leads to the creation of a set number of actions that will either enhance or reduce the resilience.

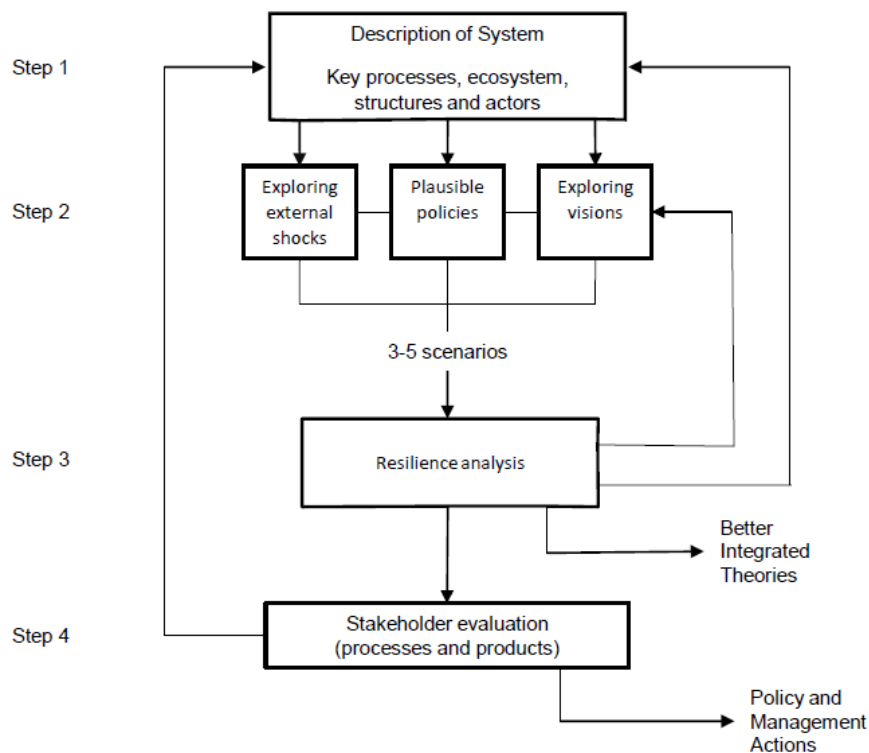


Figure 2 - Framework for the analysis of resilience in social-ecological-systems (adapted from Walker et al., 2002)

A lot of work on resilience has focused on the capacity to absorb shocks and still maintain function. But there is also another aspect of resilience that concerns the capacity for renewal, re-organization and development, which has been less emphasized, yet it is essential for the sustainability discourse (Folke, 2006). The main purpose of the paper by Folke (2006) is to provide an overview of the emergence of the resilience perspective and the context within which it has developed.

Magis (2010) tackles the community aspect of resilience with the main purpose to establish the description and dimensions of community resilience (CR) and the introduction of the CR Self-Assessment. The definition that surfaced from the research is: "Community resilience is the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise" (Magis, 2010). Out of this research also arose eight primary characteristics, i.e. dimensions that help define and operationalize community resilience. The community resilience dimensions are community resources, development of community resources, engagement of community resources, active agents, collective action, strategic action, equity, and

impact (Magis, 2010). These authors suggest the following dimensions to assess communities features which can be seen in the table below:

Table 1-Community resilience dimensions

Community Resources	Communities have access to many resources within and outside the community that can be engaged to respond to change and develop the communities' capacity (Magis, 2010).
Development of Community Resources	Community resources are dynamic. They can be developed and expanded or depleted and destroyed. Their development contributes to the community's capacity to respond to stressors, crises, and opportunities, that is, change (Magis, 2010).
Engagement of Community Resources	When community resources are engaged toward a shared community objective, the community's capacity to reach that objective can increase. Conversely, resources that are utilized only for personal or private gain may not contribute to community resilience and can, in fact, undermine a community's resilience (Magis, 2010).
Active Agents	Community members are active agents in the community's resilience. Although external forces impact the community, the community can influence its well-being and take a leadership role in doing so (Magis, 2010).
Collective Action	Community resilience is developed through collective effort to accomplish specific community objectives and is more efficacious when people from diverse and autonomous groups work together, and when people know what organizations and people are important, as well as how to accomplish their objective (Magis, 2010).
Strategic Action	Community resilience is developed through conscious deliberation, planning, implementation, and learning. The community develops itself intentionally and moves toward specific strategic visions and objectives (Magis, 2010).
Equity	Equity refers to equal access to and distribution of society's benefits and costs, and social justice for all economic and social groups, as well as equality within and between generations (Magis, 2010). Particular attention is paid to the needs of minority, disenfranchised, and non-mainstream groups (Magis, 2010).
Impact	Community resilience is evidenced in the community's successful response to crisis/opportunity/change, its successful implementation of plans, its development of new trajectories and futures for itself, and its adaptation to changes within and outside the community. Importantly, community resilience is not about controlling all the conditions that affect it. Rather, it is about thriving in those conditions (Magis, 2010).

What can be taken from Magis (2010) is that community's resilience is due to a number of reasons. It can be used by communities to track and strengthen their resilience. It can also be used by community development organizations in pre- and post-test stages to test the efficacy of various interventions on advancing community resilience. Moreover, it can be used by policymakers to inform decision making, and to examine the impact of policies on community sustainability (Magis, 2010).

2.2.2 Social Innovation

Due to pressing social, economic and environmental challenges that cities now recently come to face, social innovation has been brought to the forefront of urban development practice and policy, with most innovative governments and policy making authorities capitalizing on by incorporating it in public policy agendas and offering funding, training and networking opportunities for social innovators and their communities (Angelidou & Psaltoglou, 2017). The focus of the Angelidou & Psaltoglou, (2017) paper is that how can social innovation for sustainable urban development in which its core purpose is to analyze how social innovation fits in the urban sustainability discourse and in what way it allows urban citizens and their communities towards serving their interests (Angelidou & Psaltoglou, 2017). A description widely adopted by a large number of academic and policy papers is the one provided by the research project TEPSIE, funded under EU's FP7 due to being amassed after a very thorough and methodical review of how social innovation is understood and practiced across distinct frameworks (Angelidou & Psaltoglou, 2017). According to this research, "social innovations are new solutions (products, services, models, markets, processes) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or enhanced capabilities and relationships and better use of assets and resources" (Angelidou & Psaltoglou, 2017).

A definitive characteristic of social innovation is that it can come from and include any sector. The civil sector (non-profit organizations, non-governmental organizations, community groups, individuals), the public sector (government) and the private sector (businesses and entrepreneurs) are not only encompassed to different degrees, but sometimes 'hybrid' and 'intermediary' organizations arise from the previous, which in fact can play a major role in the social innovation process (Angelidou & Psaltoglou, 2017).

Presently, it is accepted that standards of living cannot be supported anymore, as well as that transition towards sustainability requires radical changes in the way we live. Angelidou & Psaltoglou (2017) claim that social innovations are needed in order to move from current unsustainable models of living to new, sustainable ones. Therefore, social innovation and sustainability have been increasingly addressing common concerns. This is due to the result of both the growing recognition of sustainability as a key driver of contemporary urban development, but also its establishment in the socio-

political discourse (Angelidou & Psaltoglou, 2017). In an era in which global migration, climate change, resource depletion, and social polarization threaten urban resilience in environmental, social and economic terms, the ongoing austerity has compelled national and local governments to cut down on public spending. There is insufficient funding for citizen services and, as a result, a large part of citizen and community needs are left unmet.

In the current situation, cities are the major resource consumers and simultaneously the major polluters of the planet, so the local (urban) dimension, in the sense of local challenges and needs, is quite as important as the global one, if not more (Angelidou & Psaltoglou, 2017).

In the city environment, social innovation attempts to forge solutions to “wicked”, “tenacious”, and generally hard to solve problems for which the public or private sector have so far been unable to provide solutions (Angelidou & Psaltoglou, 2017):

- It actively fosters the distribution of resources, making the first step towards sustainability (Angelidou & Psaltoglou, 2017);
- It concentrates on satisfying social and economic needs that have not been met through conventional solutions (Angelidou & Psaltoglou, 2017);
- It provides local answers to local problems, developing a knowledge and learning base which can be of value to other cities (Angelidou & Psaltoglou, 2017).

Social innovation has three fundamental distinct dimensions that come across the literature:

- “content” refers to the satisfaction of challenges and needs, which have not been met by present structures and institutions (Angelidou & Psaltoglou, 2017);
- “process” refers to the change of relationships among citizens and government and the change in the way that services are produced and offered to individuals and specific population/community groups (Angelidou & Psaltoglou, 2017);
- “empowerment” comes as a result of the social innovation process and refers to the broadening of the operational capacity of citizens and organizations to act, respond and be heard, in turn strengthening their role and position in the state of play (Angelidou & Psaltoglou, 2017).

During the analysis of different case studies regarding social innovation for sustainable urban development, the authors identified the key roles that citizens acquire, what needs are fulfilled by means of this role, and how citizens are empowered, coming to the identification of four main roles: “citizen-sensor”, the “sharing citizen”, the “collaborative citizen” and the “entrepreneurial citizen” (Angelidou & Psaltoglou, 2017), which can be seen in figure 3 below.

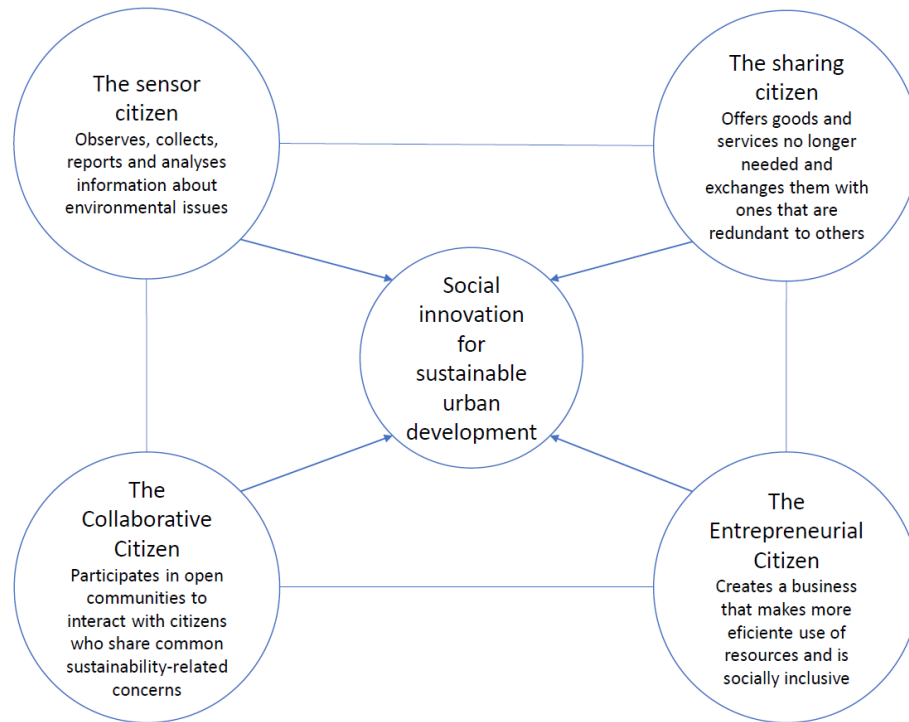


Figure 3- Four citizen profiles around social innovation for sustainable urban development and how they contribute to urban sustainability (adapted from Angelidou & Psaltoglou, 2017)

The sensor citizen contributes to urban sustainability by crowdsourcing environmental data and helping detect and map underlying trends and problems, namely in the area of water /air pollution and biodiversity loss. The sharing citizen contributes to urban sustainability by extending the useful life duration of products and services, as well as saving on economy and energy resources. The collaborative citizen contributes by discussing, finding and testing solutions for improving energy and resource efficiency, in addition to recycling and helping raise awareness about them. Finally, the entrepreneurial citizen contributes to urban sustainability by creating new jobs, granting more inclusive access to consumer products, and promoting social inclusion and resource efficiency (Angelidou & Psaltoglou, 2017).

The paper by Davies & Simon (2012), aims to illustrate what citizen engagement might be like in the context of social innovation by studying a group of case studies, and, in turn, the different ways various voices and actors can be brought into the process of developing and then sustaining innovative solutions to social challenges (Davies & Simon, 2012). The authors say that instead of utilizing these case studies to provide a toolkit of how citizen engagement can be used in social innovation, it can be more fruitful and informative to examine specific and different forms of citizen engagement rather than to group these diverse activities together under the concept of 'citizen engagement in social innovation' (Davies & Simon, 2012).

The definitions that the authors present in the paper are that social innovation are new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social necessity (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources (Davies & Simon, 2012). Moreover, it is stated that citizen engagement and public participation refer to a broad range of activities which involve people in the structures and institutions of democracy or in activities which are related to civil society (Davies & Simon, 2012).

Davies & Simon (2012) present case studies that employ different methods of citizen engagement in social innovation, which they define as the many ways in which more diverse actors can be brought into the process of developing and then sustaining new solutions to social challenges (Davies & Simon, 2012). The methods proposed by these authors include the following:

- Peer-led research – Peer-led research is usually defined as the research processes which are directed and conducted by citizens, while in traditional research, when concentrating on problems that afflict a specific group of people, the people experiencing the problem are the objects of the research. In contrast, peer- or user-led research adopts a 'bottom up' methodology where those who are members of the target group play an active role in studying their peers (Davies & Simon, 2012), thus providing a way of capturing the direct experience citizens have of particular needs or situations (Davies & Simon, 2012). The peer-led approach, therefore, offers the potential to build lasting relationships with a group of people an organisation may want to work with in the future (Davies & Simon, 2012). But there is the possibility that by applying

this approach one can miss valuable insights by people that are not as participative as the people who are eloquent and really want to be intellectually challenged and involved in their communities. Furthermore, high quality research work cannot be easily learnt in a very short period of time and most projects will need some research expertise alongside the work of peers or users (Davies & Simon, 2012).

- Crowdsourcing - Crowdsourcing is the gathering of information but when the information is provided by the public and not by experts. The key features of this new model of production and problem solving are that it is open, online and distributed (Davies & Simon, 2012). With this method, an overall better understanding of situations can be obtained the more people are involved and the more information is provided (Davies & Simon, 2012). However, this brings along challenges like information verification, ensuring that the information collected is reliable and accurate, as well as encouraging participation, which means that barriers to entry have to be low (Davies & Simon, 2012).
- Co-design - Co-design describes an approach to social problems that sees designers working in partnership with service users and practitioners to develop solutions that work (Davies & Simon, 2012). Co-design is able to generate new ideas very fast because it is possible to test out things at a small scale first, and by involving stakeholders in the core design process of programmes and solutions to specific problems and bringing real-live experience into said solutions, it can be ensured that what is created is something that attracts stakeholders that would want to be a part of that initiative and also something that would create positive change (Davies & Simon, 2012). The downside of this method is that working with groups of citizens to help design a new solution takes time because it depends on building up a relationship of trust (Davies & Simon, 2012).
- Competitions - The rise of competitions in order to induce innovation comes from the increase of the concept of open innovation, which recognises that a single organisation cannot contain all the knowledge and skills required to solve its research and development challenges (Davies & Simon, 2012). So, by utilizing competitions to induce innovation, it is possible to attract new capital to a problem, providing new incentives that outweigh those that currently operate. And they attract new people, who use new kinds of resources to focus on the problem at hand (Davies & Simon, 2012). Using this method, it is possible to

reach and engage communities who wouldn't normally have got involved in innovation around climate change (Davies & Simon, 2012). Moreover, the added value to the communities that participate is that by utilizing the training they received, they are able to progress and take ideas forward, but drive high levels of participation, and crucially, participation from a wide range of actors (Davies & Simon, 2012). A major commitment of resources is required throughout the life of the competition (Davies & Simon, 2012). There is also the challenge of pitching the challenge in a way that will be motivating, which is especially hard for complex social issues that centre on relationships and behaviour change (Davies & Simon, 2012).

- **Participatory Budgeting** - Participatory budgeting is a process for directly involving citizens in making decisions about how public money should be spent (Davies & Simon, 2012). What this usually comprises is the participation of citizens in identifying spending priorities, making and then voting on proposals about how to spend the budget, and then involving citizens in overseeing and evaluating how the money was spent (Davies & Simon, 2012). The value that comes from this approach is on the strengthening of democracy and reverse declining levels of trust and public participation, as well as developing social cohesion, social inclusion and building social capital (Davies & Simon, 2012). Another benefit of this approach is the legitimacy of the budgeting process and finding out directly from residents what their needs are, what their priorities are, and the kinds of services they want the most (Davies & Simon, 2012). However, the percentage of the community that participates in this type of method is small, which raises doubts about whether or not decisions taken by such a small number of local residents are legitimate (Davies & Simon, 2012), and also about the extent to which these kinds of processes deliver 'real control' and 'real power' to local citizens, especially when the sums of money involved are only a small proportion of municipalities' total budgets (Davies & Simon, 2012).
- **Co-operative governance** - Co-operatives are jointly owned and democratically controlled organisations that are established to meet common economic, social and cultural needs (Davies & Simon, 2012). The value of this method is the added responsibility, as well as the higher level of commitment from part of the stakeholders in the initiative due to fact they are part owners (Davies & Simon, 2012). While on the one hand, a worker co-operative governance structure may

be a sign of greater autonomy and professional freedom, in some instances it might prevent innovation (Davies & Simon, 2012).

So, in conclusion, Davies & Simon, (2012) state that citizens have specific knowledge of their own lives which no organisation can claim, so the methods depicted in their paper enable a better understanding of problems that an innovation might address. According to these authors, citizens can be the source of innovative ideas and by engaging citizens, contributions from varied and sometimes unexpected sources are enabled, which introduces divergent thinking (Davies & Simon, 2012). In addition, there is also the fact that innovation that is developed by and alongside citizens presents a greater legitimacy than those initiatives which are developed without engagement activities. The authors conclude, therefore, that in order to tackle the challenges of social innovation, it is imperative that the participation, co-operation and 'buy-in' of citizens is required due to the fact that they depend on the fundamental changes of the citizens' behaviour and attitudes (Davies & Simon, 2012).

2.2.3 Knowledge-networks and grassroot initiatives

A network is defined by a set of vertices (also known as agents, actors, or nodes) connected through a set of links (also known as ties or edges). Depending on how these vertices and links are defined, networks can provide unique insights into processes that matter for sustainability (Henry & Vollan, 2014). Henry & Vollan (2014) focus on the role of social networks in sustainability science—that is, the relationships that link together social agents such as formal organizations, policy actors, resource users, and members of the general public (Henry & Vollan, 2014). In their review, they conclude that networks are prominent in three types of challenges that hinder sustainability: linking knowledge with action, enhancing collective action, and promoting social learning. A better understanding of network structure and dynamics can, thus, inform practical strategies to solve or manage these problems (Henry & Vollan, 2014).

Grassroot initiatives are comprised of non-profit organizations that mostly operate on a local scale and which seek innovation processes that are socially inclusive towards local communities in terms of the knowledge, processes and outcomes involved

(Smith, Fressoli, & Thomas, 2014). These initiatives are often left out of foresight exercises and innovation policies of formal scientific, technology and innovation communities, and that should not happen because according to the OCDE (2010) and as mentioned by Smith et al. (2014), good practice in innovation policy is considered to nurture partnerships between firms and science and technology institutes, foster entrepreneurship, and incentivize investment in innovation activities and due to the fact that these initiatives often appear in a response to perceived social injustices and environmental problems often arising in conventional innovation models (Smith et al., 2014). So while it will prove difficult for these initiatives to create lasting relations with the entities mentioned above, at a time when innovation policies are increasingly called upon to address issues of poverty, social inclusion and sustainability, the knowledge produced by grassroots innovation movements should be taken seriously, namely as a resource for debating and constructing different pathways to sustainable futures (Smith et al., 2014).

Because of the similarities in many of these initiatives in approaches and principles, Smith et al. (2014) state that grassroot initiatives are confronted by the same challenges during their operation, them being:

- Attending to local specificities whilst simultaneously seeking wide-scale diffusion and influence (Smith et al., 2014);
- Being appropriate to existing situations that one ultimately seeks to transform (Smith et al., 2014);
- Working with project-based solutions towards goals that fundamentally require structural change (Smith et al., 2014).

3. Case study analysis

3.1. Methodology and case studies

The TRUST project focuses on sustainability transition initiatives supported by social learning and innovation as important factors that drive transformative change in social-ecological systems for community development. Each of the case studies presented in this dissertation are initiatives that attempt to make changes in different aspects of the social-ecological system. The selected case studies are the following:

- The case study of Ciclaveiro with the environmental approach aiming at the transformation of mobility by bike in the city of Aveiro;
- The case study of the Murtosa fisherwomen association with the economical aspect tackled by the search for equal working rights for women in the fishing business;
- The Santiago's civic laboratory with the social approach attempting to change the public opinion of the neighbourhood.

In order to better comprehend these initiatives and to be able to identify the different barriers and drivers that affect these case studies, interviews were conducted by applying a set of questions provided by the TRUST project. These were replied by the identified leaders of the case studies. With these results, an assessment of the barriers and drivers concerning these initiatives is expected to be put forward, as well as the identification of the importance of social innovation in the different forms encountered in the case studies as regards the transition to more sustainable communities.

The questions provided by TRUST are the following:

A) Problems & triggers for development

A1) What problem does the initiative address?

A2) What are the motivations / triggers to act? Who is responsible for starting the initiative?

B) Aims & Objectives

B1) What are the stated aims and objectives of the initiative?

C) Scale (territorial, temporal, domain)

C1) When did the initiative start? If finished, how long did it last?

- C2) Where is it happening and at what scale – local, municipal, regional, national, transnational, multi-regions?
- C3) Is it a replication of another initiative or is it expected/likely to be replicated?
- C4) What is the focus – sector vs multi-sector? e.g. food, greening, recycling, water, energy, mobility, agriculture
- D) Network of actors
 - D1) Who is involved? What are their roles - e.g. 'innovator' / entrepreneur, member, user, citizen, consumer, activist, resident, neighbour, community leader?
 - D2) Is any agent of change identified? If yes, what was his role?
 - D3) What strategies and techniques were used to enrol actors?
 - D4) Which internal decision-making and steering processes does it work with?
- E) Activities
 - E1) What – type of - activities are being developed?
- F) Transitions
 - F1) Does the initiative promote transitions/transformations towards sustainability? And does the initiative refer to itself as promoting transitions/transformations towards sustainability - How? And what is the form/shape of such transitions/transformations?
 - F2) How does it respond (or claims to respond) to major societal changes / trends – e.g. ageing population, climate problems, ICT, education and youth?
 - F3) Have aims, actors and activities changed over time? Why & When?
- G) Social innovation
 - G1) Does the initiative develop, or describe itself as developing, new social practices, new ideas, new models, new policies/programmes, new rules, new social relations, new services and/or new products?
 - G2) Does the initiative promote, or refer to itself, as a social innovation? Why they consider themselves as social innovation? How it looks like?
- H) Reflections
 - H1) What are the learning lessons of the initiative?
 - H2) What are the helpers / blockers of the initiative?
 - H3) Is there any monitoring system established – and what type of procedures?
 - H4) Who is responsible for each of the monitoring procedures?

3.2 Case Study analysis

3.2.1 Ciclaveiro

The case study of Ciclaveiro refers to an association comprised of a group of citizens that operates at the local level in the city of Aveiro (figure 4) and that believes in the power of using a bicycle as a means of transportation in order to improve people's quality of life. The first steps towards the creation of this organization were taken in the virtual space, with the creation of an informal group of knowledge sharing on Facebook, composed of people who presented similar ideals, with the theme of mobility in cities and with the main objective of solving a problem, namely the excessive use of motorized means of transportation with the use of fossil fuels through the use of the bicycle and other active means of transportation. The way that they attempt to achieve this objective is by doing numerous activities, some of them can be seen in the figure below.

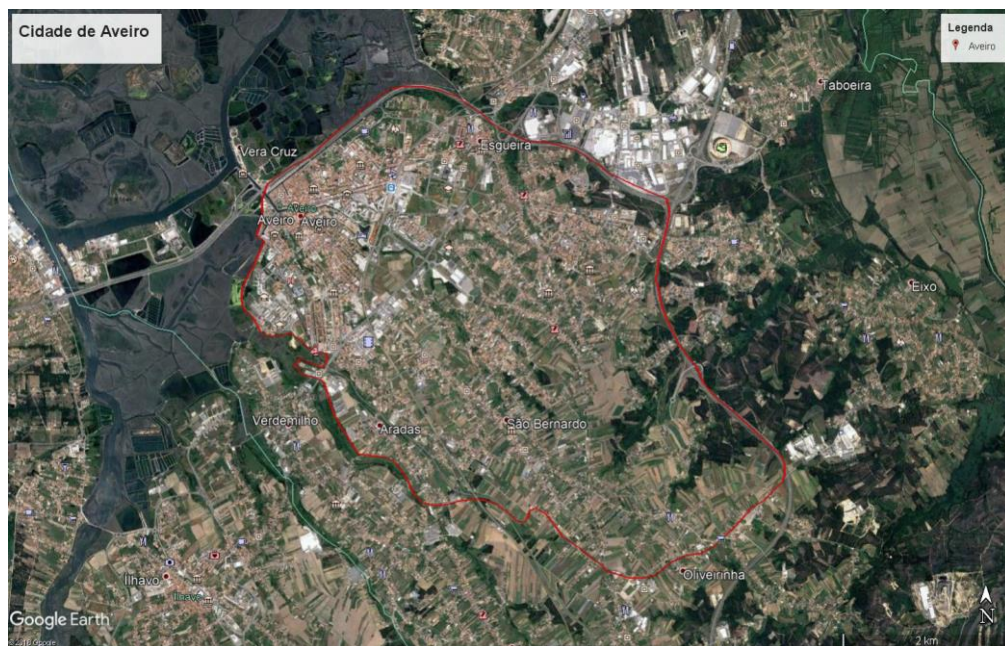


Figure 4 - Area of operation of Ciclaveiro

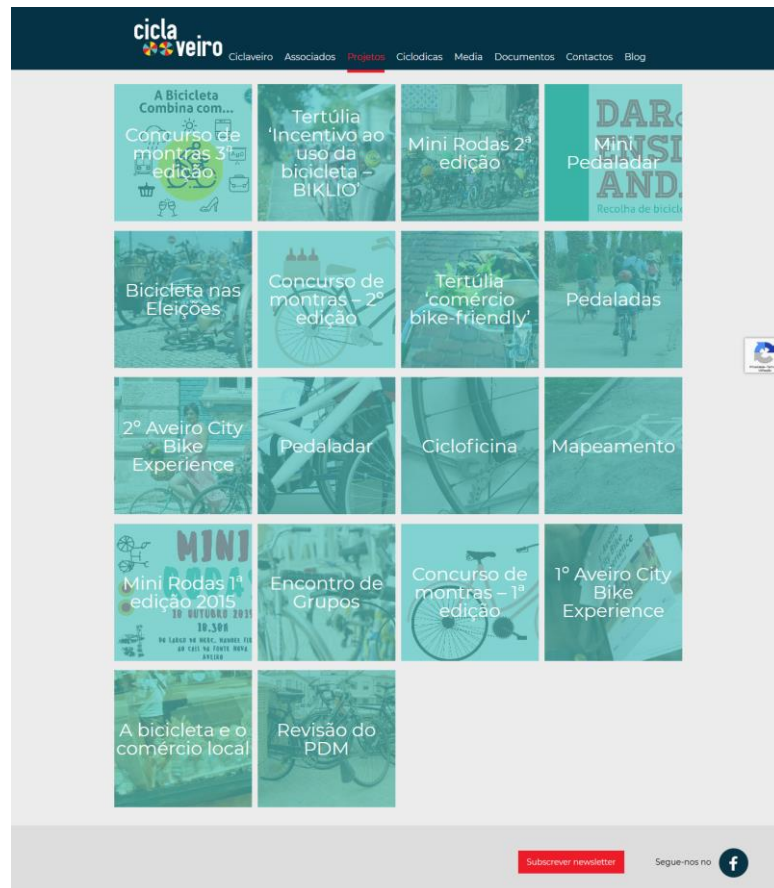


Figure 5 - Activities conducted by Ciclaveiro

Next are presented the answers to the previously mentioned questions that were made during the interview to Ciclaveiro's current leader.

The answers provided by the initiative are the following:

A) Problems & triggers for development

A1) What problem does the initiative address?

"The excessive use of means of transportation that use fossil fuels"

A2) What are the motivations / triggers to act? Who is responsible for starting the initiative?

"Our main objective is to promote the use of bicycles, especially on a day-to-day basis, in commuting, traveling between home and work / school or on the way to

do some shopping, without forgetting its use as a vehicle for strolling or leisure" (Ciclaveiro website).

The person responsible for the initiative is the current chairman of the board

B) Aims & Objectives

B1) What are the stated aims and objectives of the initiative?

"- To be an active interlocutor and to promote communication between citizens and political power and public institutions, the media, non-governmental organizations, business and civil society in general, on issues related to accessibility and mobility, and mobility issues;

- Publicize, defend and extend the rights of cycling users by helping to create a more conscious and sensitive society for the benefits of cycling;

- Defend the creation and improvement of structural conditions favorable to the use of bicycles for utilitarian and leisure purposes or tourism;

- To actively contribute to the planning and monitoring of the construction and maintenance of bicycle infrastructure, as well as the creation, analysis and discussion of strategic documents related to accessibility and mobility;

- To develop and disseminate the culture and knowledge about sustainable means of transportation, especially the active ones, and in particular the use of the bicycle, and for this purpose, to carry out cultural, sporting, playful or educational activities;

- Develop studies, research, and training actions or provide advice on topics related to its scope of action;

Promote the adoption of measures to protect users of active means of transportation, in particular bicycle users, given their fragile condition in relation to their motorized counterparts;

- Promote spatial planning and public space occupation planning to integrate and protect users of active modes of mobility, contributing to the existence of more pleasant, safe, dynamic spaces and conducive to better quality of life for all;

- Support or participate in research, design and development projects with the aim of promoting innovation and / or knowledge enhancement in the field of soft mobility;

- Promote and encourage collaboration between organizations and entities with objectives similar to or complementary to those of the association."(Ciclaveiro website)

C) Scale (territorial, temporal, domain)

C1) When did the initiative start? If finished how long did it last?

"The initiative started from an informal group of knowledge sharing with the theme mobility in cities called "Aveiro em transição" and as people were raised with similar ideals (to solve the problem of excess of motorized means of transportation), that resulted in the creation of a network of citizens known as Ciclaveiro in 2015".

C2) Where is it happening and at what scale – local, municipal, regional, national, transnational, multi-regions?

"Ciclaveiro operates in the council of Aveiro, which makes the scale of the initiative local, but efforts have been made to promote and participate in national-level events as well as international ones, having been distinguished by EUROPEANMOBILITYWEEK in consultation with the European Commission as the best European example of awareness-raising and promotion of sustainable urban mobility, out of almost 200 registered actions".

C3) Is it a replication of other initiative or is it expected/likely to be replicated?

"The initiative is in the first stages of being replicated in other locations, namely in Ílhavo. But there are similar initiatives in other parts of the country".

C4) What is the focus – sector vs multi-sector? e.g. food, greening, recycling, water, energy, mobility, agriculture

"The primary focus of the initiative is mobility."

D) Network of actors

D1) Who is involved? What are their roles - e.g. 'innovator' / entrepreneur, member, user, citizen, consumer, activist, resident, neighbour, community leader?

"The Ciclaveiro is made up of any individual or collective person, Portuguese or foreign, who intends to contribute, as far as possible, to the pursuit of the purposes of the Association, being citizens, users of bicycles, the majority being between the age of 30 and the early 40s".

D2) Is any agent of change identified? If yes, what was his role?

"Since Ciclaveiro is an organization composed of a group of individuals motivated by their ideals and vision for the world and by actively trying to change how others see the world, they can be considered as agents of change".

D3) What strategies and techniques were used to enrol actors?

"The strategies used are the dissemination of their activities and vision through social networks and websites, in the hope that others who share their ideals will join the organization. They also make promotions in the activities they perform for members and have a newsletter".

D4) Which internal decision-making and steering processes does it work with?

"In its initial phase, Ciclaveiro did not use any particular method, but currently they divide projects by sector and distribute the members that can contribute the most due to personal qualifications and experience across certain activities, resulting in a plan of activities that they undertake to fulfill within the realm of possibility".

E) Activities

E1) What – type of - activities are being developed?

"Ciclaveiro has developed several activities over the years, some of which are the delivery of documents with recommendations of principles and fundamental measures for an integrated strategy towards a more active and sustainable mobility in the city of Aveiro; Motivate for the recreational and utilitarian use of the bicycle; Serve as a medium between the citizens and the political forces of the Municipality of Aveiro; Contribute to the increase of interactions and strengthening of community relations, and to the development of skills and autonomy of cycling users"(Ciclaveiro website).

F) Transitions

F1) Does the initiative promote transitions/transformations towards sustainability? And does the initiative refer to itself as promoting transitions/transformations towards sustainability - How? And what is the form/shape of such transitions/transformations?

"Considering that social innovation seeks something in different strategies, especially solutions to benefit communities, yes we can assume so. The project exists for the purpose of improving citizens' quality of life, better city, better public space, better air quality and greater proximity to the community and its relationships".

F2) How does it respond (or claims to respond) to major societal changes / trends – e.g. ageing population, climate problems, ICT, education and youth?

"By conducting the several activities present in the initiative, it makes an attempt at some of the challenges, namely climate problems and education"

F3) Have aims, actors and activities changed over time? Why & When?

“Activities can change in order to diversify the type of activities created, but the ultimate goal has not changed, as well as the actors involved in the initiative”.

G) Social innovation

G1) Does the initiative develop, or describe itself as developing, new social practices, new ideas, new models, new policies/programmes, new rules, new social relations, new services and/or new products?

“The initiative has developed proposals and suggestions to projects regarding mobility in the city of Aveiro”

G2) Does the initiative promote, or refer to itself, as a social innovation? Why they consider themselves as social innovation? How it looks like?

“With the Ciclaveiro project, I think we can assume that we are experimenting with new models of community awareness of the change needed in their mobility and demonstration habits by practicing the concrete benefits of this change. We like to assume that more than one association (which we are formally and legally constituted) we are a group of citizens, people who want to contribute to the paradigm shift of mobility in the city. That is why we consider public policies decisive for real change, particularly in terms of infrastructure and city design, but people have action too, the community is our focus. Make the community aware of this change and thus also contribute to a policy change. Train more aware, more active, participative, collaborative citizens through projects where they engage and involve others by experimenting and innovating”.

H) Reflections

H1) What are the learning lessons of the initiative?

“People make all the difference in your community. Where there are problems there are solutions, and people have motivation, the main ingredient for resolution. Involving people in your search is crucial. It is important to create sharing and collaboration networks, to open these networks and to develop projects as

connected to the community as decision-making, with balance. Maybe this is one of the biggest lessons.

In the case of Ciclaveiro we have identified some audiences with which we have been working more: children, traders and the general population. We have identified another company, but we have not had the opportunity to work. The action being important, is in its communication expanding and validating the project. In other words, do without communicating”.

H2) What are the helpers / blockers of the initiative?

“Blockades- Lack of support from the municipality, use of resources to try to pass the message to the local autarchy; Drivers - other associations facilitate the transmission of the cycling message to other groups at national levels”.

H3) Is there any monitoring system established – and what type of procedures?

“There isn’t an established procedure. Ciclaveiro admits that regarding this topic, improvements can and should occur. One of the steps was during the activity "mini rodas" where registration forms were made; inquiries were sent about the initiative, producing graphs in order to show benefits of initiatives to partners. And that monitoring has not been done in other cases for example the "cicloficina", due to the informal nature of the activity in question”.

H4) Who is responsible for each of the monitoring procedures?

“Because there is no established procedure, there is no responsible for the monitoring”

3.2.2 Murtosas’s fisherwomen association

The Murtosa’s Fisherwomen Association was created in 2005 in order to tackle issues related to equal rights in the profession. The initiative is composed by a group of fisherwomen that organized and came together to face problems of affirmation and

survival in fishing, a profession which has predominantly been occupied by men. This initiative operates at a local scale in the Murtosa area presented in figure 6.

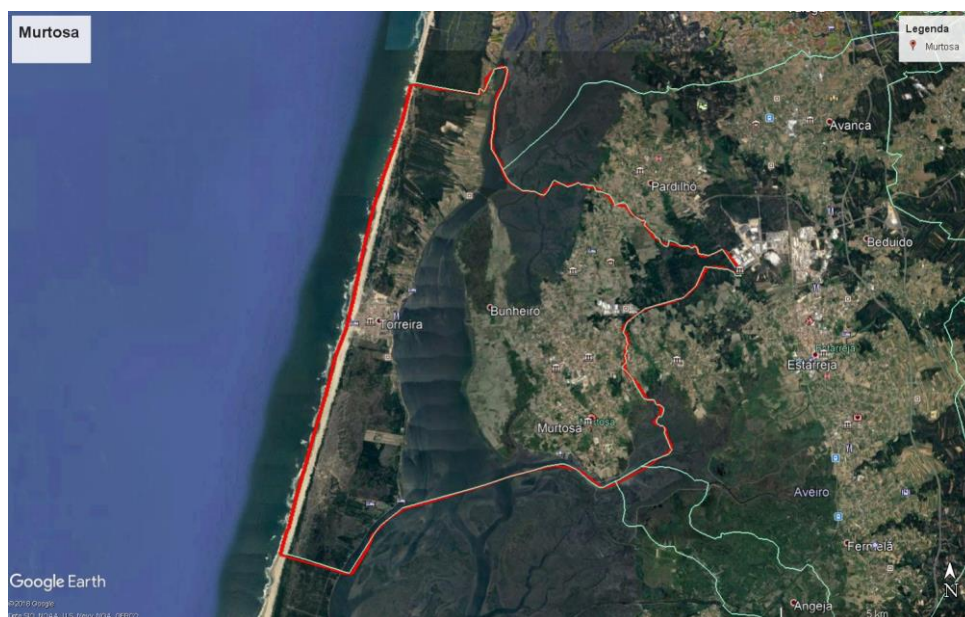


Figure 6 - Area of operation of Murtosa's Fisherwomen Association



Figure 7 - Poster for gathering of fisherwomen in Murtosa (adapted from pong-pesca website)

Next, are presented the answers to the previously mentioned questions that were made during the interview to Murtosa's Fisherwomen Association current leader.

The answers provided by the initiative are the following:

A) Problems & triggers for development

A1) What problem does the initiative address?

“The chance to fight gender discrimination in the profession of fisherwomen, to declare the professional status of fisherwomen and to facilitate access to the national social security system of the fisherwomen’s families”.

A2) What are the motivations / triggers to act? Who is responsible for starting the initiative?

“The motivation for starting this initiative was that prior to the creation of this initiative, women could only fish while being accompanied by men, not being able to be commanders of their own boat, due to the lack of a type of official professional qualification. We wanted women to be able to graduate as fisherwomen. In addition, the lack of legislation has led to obstructions in accessing the social security discount”.

B) Aims & Objectives

B1) What are the stated aims and objectives of the initiative?

“The objectives of the initiative are to achieve equal rights in the profession of fisherwomen and to bring attention to tools / activities that fisherwomen can use in order to achieve greater financial stability and thus gain greater independence in the profession”.

C) Scale (territorial, temporal, domain)

C1) “The initiative began in 2005. The initiative has not yet been finalized but has been suspended for some time”.

C2) Where is it happening and at what scale – local, municipal, regional, national, transnational, multi-regions?

“The Murtosa Fishermen's Association operates locally, making connections both at national (Starfish) and international levels (Acteia)”.

C3) Is it a replication of other initiative or is it expected/likely to be replicated?

“There have been attempts to replicate the initiative, but unsuccessfully due to differences in objectives and priorities in different communities”.

C4) What is the focus – sector vs multi-sector? e.g. food, greening, recycling, water, energy, mobility, agriculture

“The focus of the association is on both the social sector and economical sector”.

D) Network of actors

D1) Who is involved? What are their roles - e.g. ‘innovator’ / entrepreneur, member, user, citizen, consumer, activist, resident, neighbour, community leader?

“The fisherwomen of the community of Murtosa, who have the role of members of the initiative, are involved in the association, as well as citizens of the community in which the initiative operates”.

D2) Is any agent of change identified? If yes, what was his role?

“The change agents identified are the creator of the initiative, who had to retire due to health reasons, a representative of the Northern Union of Fisheries and the present responsible for the initiative, whose roles were those of innovators”.

D3) What strategies and techniques were used to enrol actors?

“The strategies used are the dissemination of their activities in person”.

D4) Which internal decision-making and steering processes does it work with?

“The decision-making process was carried out by the association's group of leaders with the participation of the fisherwomen whenever possible”.

E) Activities

E1) What – type of - activities are being developed?

“The activities developed were the involvement in the making of the labor law in the profession of fisherwomen: Gatherings; Assistance in research projects and workshops to develop skills that the fisherwomen can utilize to increase their revenue during fishing ban time periods”.

F) Transitions

F1) Does the initiative promote transitions/transformations towards sustainability? And does the initiative refer to itself as promoting transitions/transformations towards sustainability - How? And what is the form/shape of such transitions/transformations?

“When the legislation that improves the working conditions for fisherwomen was achieved, this association was able to achieve a social change in the face of the challenge to which it had been proposed, therefore they succeeded in promoting the transition to sustainability”.

F2) How does it respond (or claims to respond) to major societal changes / trends – e.g. ageing population, climate problems, ICT, education and youth?

No/Unable to respond

F3) Have aims, actors and activities changed over time? Why & When?

“The activities remained constant throughout the operation time of the association, as well as its objectives. Only the members have changed due to personal obstacles”.

G) Social innovation

G1) Does the initiative develop, or describe itself as developing, new social practices, new ideas, new models, new policies/programmes, new rules, new social relations, new services and/or new products?

“The association helped in the development of new legislation regarding the fisherwomen as such they introduced a change at the political level”.

G2) Does the initiative promote, or refer to itself, as a social innovation? Why they consider themselves as social innovation? How it looks like?

“The association is considered as an example of social innovation for having been able to bring better working conditions for the fisherwomen as well as the introduction of possible activities during the fishing ban period in order to produce additional sources of income during this time”.

H) Reflections

H1) What are the learning lessons of the initiative?

No/Unable to respond

H2) What are the helpers / blockers of the initiative?

“Blockades- Community with closed minds that presented great difficulties to get involved, in addition to minimal support from government entities and by the maritime police”.

H3) Is there any monitoring system established – and what type of procedures?

“Meetings were held to conduct a self-assessment of activities and by doing so they were able to draw lessons for future activities”.

H4) Who is responsible for each of the monitoring procedures?

“Those responsible for the monitoring procedures are the leaders of the initiative”

3.2.3 Santiago's civic laboratory

The Santiago's civic laboratory is an initiative that is localized in a social neighborhood in Aveiro (figure 6) where citizens from different cultures live together and aim to prototype solutions to urban problems through experimentation guided by mediators, in a framework of involvement of citizens and local actors, for subsequent replication as a result of learning. This initiative is the first replica in Portugal of the Experimenta Distrito initiative that took place in Madrid, Spain being created in 2019. However, it is not a platform for producing 'quick fixes' or urgent response to acute problems (Lab.Santiago website).



Figure 8 - Area of operation of Santiago's Civic Laboratory



Figure 9 - Website of Santiago's Civic Laboratory

Next are presented the answers to the previously mentioned questions that were made during the interview to the Aveiro University professor and Santiago's Civic Laboratory coordination team member.

The answers provided by the initiative are the following:

A) Problems & triggers for development

A1) What problem does the initiative address?

“The project attempts to get rid of the stigma concerning this social neighborhood as well as to bring the remaining members of the community together and show the neighborhood community that it has the power to influence the changes that occur in the neighborhood”.

A2) What are the motivations / triggers to act? Who is responsible for starting the initiative?

"The motivation is to change the role of the University of Aveiro in the communities that is mostly consulting as well as collaboration and cooperation with local actors".

B) Aims & Objectives

B1) What are the stated aims and objectives of the initiative?

"Creating a space where citizens share common problems and desires and experience collaborative ways of responding through the sharing of ideas, knowledge and wishes, in a climate of respect and tolerance, and where they learn "how to improve those processes in order to contribute to the improvement of the life of the members of their community"
(Lab.Santiago website).

C) Scale (territorial, temporal, domain)

C1) When did the initiative start? If finished how long did it last?

"The initiative began in March 2019 and ended on June 10, 2019".

C2) Where is it happening and at what scale – local, municipal, regional, national, transnational, multi-regions?

"The initiative operates in a neighborhood in the city of Aveiro - local scale".

C3) Is it a replication of other initiative or is it expected/likely to be replicated?

"The initiative is the first replica in Portugal of the Experimenta Distrito initiative that took place in Madrid, Spain, and can be replicated in other locations in the country".

C4) What is the focus – sector vs multi-sector? e.g. food, greening, recycling, water, energy, mobility, agriculture

“The focus of the initiative is multisectoral, since it is possible to present any proposal to the laboratory, as it aims to improve the quality of life of the community”.

D) Network of actors

D1) Who is involved? What are their roles - e.g. ‘innovator’ / entrepreneur, member, user, citizen, consumer, activist, resident, neighbour, community leader?

“The civic laboratory is composed of the various citizens of the community of the Santiago’s neighborhood, the association of Florinhas do Vouga, a social solidarity institution that dedicates much of its attention to the social neighborhood and that plays the role of activists, as well as the team of the University of Aveiro that is helping coordinate the initiative”.

D2) Is any agent of change identified? If yes, what was his role?

“The civic laboratory is an initiative that counts on a group of citizens motivated by their ideals and vision for their community and by actively trying to change how others see the community to which they belong. As such, they can be considered as agents of change that play the role of residents, citizens and members”.

D3) What strategies and techniques were used to enrol actors?

“The strategies used were the dissemination of their activities and vision through social networks and on their website as well as one of the most important techniques that was the explanation in person to the largest number of people possible in the neighborhood of Santiago”.

D4) Which internal decision-making and steering processes does it work with?

For the selection of the projects that were to follow, they used an open tender. Out of a total of 34 project proposals, a jury composed of community members chose 10 of the proposals following a set of evaluation criteria: "Clarity of the proposal; Adequacy to the objective and thematic of the Laboratory; Relation with the reality, the knowledge, the memories and the diversity of the Santiago Quarter; Integration of different perspectives, and knowledge; Opening for transformation during collaborative actions; Technical feasibility, suitability to the proposed methodology and the time foreseen for its development; Project sustainability: resource optimization, material recycling and zero waste; Use of open source tools and licenses that facilitate free access to their development and results; Inspiration, adaptation and reproduction of good practices; Diversity of ideas" (Lab.Santiago website).

E) Activities

E1) What – type of - activities are being developed?

“The projects being developed by the civic laboratory are:

Uma Anamorfose em Santiago, Fotojornalismo na redacção Santiago, “Sê Fixe, Não Lixe”, Dia dos vizinhos, Partilha de sabores e saberes, A Horta da vizinha é melhor que a minha, Tec Para Todos, A Próximação, Dar vida a Santiago e Receitas da CPLP”.

F) Transitions

F1) Does the initiative promote transitions/transformations towards sustainability? And does the initiative refer to itself as promoting transitions/transformations towards sustainability - How? And what is the form/shape of such transitions/transformations?

“Due to the form of the various activities, with which the initiative tries to change the public opinion regarding the stigma that surrounds this social district, this initiative promotes the transition/transformation towards sustainability even though it does not say that it promotes transitions towards sustainability”.

F2) How does it respond (or claims to respond) to major societal changes / trends – e.g. ageing population, climate problems, ICT, education and youth?

“The civic lab tries to respond to a number of different social challenges through the promotion of the projects that are currently being developed”.

F3) Have aims, actors and activities changed over time? Why & When?

“The goal remains the same, there is the tolerance to receive new members during the development of the projects since constant reflection and innovation are promoted. In addition, it is possible to observe a change in the actors”.

G) Social innovation

G1) Does the initiative develop, or describe itself as developing, new social practices, new ideas, new models, new policies/programmes, new rules, new social relations, new services and/or new products?

“The initiative tries to develop new social practices and new relationships between the people that are involved”.

G2) Does the initiative promote, or refer to itself, as a social innovation? Why they consider themselves as social innovation? How it looks like?

“The initiative is not explicitly referred to as social innovation but, in fact, it is. This is observed in micro-changes that are tested in a public space in order to generate innovation”.

H) Reflections

H1) What are the learning lessons of the initiative?

“What can be deduced from this initiative is that even in a small community such as the social neighbourhood of Santiago, it is possible for people to organize themselves in order to create an extremely demanding initiative and have the

community take all the risks. It is also possible to see how these exercises can promote social innovation, and to conclude that social innovation can occur at scales of this size”.

H2) What are the helpers / blockers of the initiative?

At the time of this interview the political powers have been neither helpers nor blockers.

H3) Is there any monitoring system established – and what type of procedures?

“In terms of monitoring, meetings are held at regular intervals, there is a permanent contact through the Facebook group, as well as the ability of groups of different projects to self-assess”.

H4) Who is responsible for each of the monitoring procedures?

“The teams of coordinators are the main responsible for the monitoring procedures.”

The reason why some of the questions were left un-responded in the interviews conducted is due to the fact that they were made in an informal setting with a limited amount of time.

3.3 Comparative analysis

In the case of mobility in the city of Aveiro, the current legislation for mobility is one that has little to no input from grass-root organizations, the reason being that despite Ciclaveiro’s attempts in the delivery of documents with recommendations of principles and fundamental measures for an integrated strategy and for a more active and sustainable mobility in the city of Aveiro, they were met with little to no support from the municipality. Therefore, when it comes to sustainable transition (the change from one form, state, style, or place to one more sustainable), Ciclaveiro were confronted with obstacles in changing the governmental aspect. On the social aspect, by changing the mentality of a percentage of their community, they were able to

contribute to the improvement of the image of the bicycle as a means of transportation capable of replacing the conventional counterparts that depend on fossil fuels by their activities. Therefore, the community was able to transition into one with a more sustainable view of mobility, this can be confirmed by the efforts made to participate both at the national and international level with other associations that consist of some of the helpers of Ciclaveiro. This brings us to the environmental/ecological aspect of transition: by contributing to the usage of the bicycle as the main way of transportation, Ciclaveiro is able, in some degree, to aid in the reduction of fossil fuel usage and carbon-emission in their community thus helping the transition of the aforementioned community into a more sustainable one.

With the case study of the Santiago civic laboratory, the objective was not one that aimed at the creation of new legislation but more of a social transition by getting rid of the stigma of the social neighbourhood, as well as bringing the remaining members of their community together and show that the neighbourhood community that it has the power to influence the changes that occur in the neighbourhood towards a more sustainable form. In the environmental and ecological perspective, a transition towards a more sustainable form can be achieved in the form of the activities that were being developed, that has consequently led to a more knowledgeable community that engages in more sustainable practices in their daily life. As regards helpers and blockers, the civic laboratory had the help of an organization that also operates in the city of Aveiro and also in the neighbourhood of Santiago, called Florinhas do Vouga, that contributed with the space in which the civic laboratory's meetings operated. When it comes to blockers, at the time no political powers have demonstrated to be neither against nor in favour of the initiative.

In the case study of the fisherwomen of Murtosa, there was a transition related to governance, as they were able, through this initiative, to obtain the legislation that declares the professional status of fisherwomen and equals the rights in the profession of fishermen. In addition, they were able to bring attention to the tools / activities that fisherwomen can use in order to achieve greater financial stability. As such, and because of the new legislation, fisherwomen were able to operate boats without the need for a fisherman to be present in their vessel. Because of this, plus the proposed activities in which the fisherwomen could use their skills in the off season, they were able to increase their individual monthly income, therefore a transition on

the social level was achieved. During the course of this initiative, the fisherwomen had to deal with the lack of support from government entities along with minimal involvement of the marine authorities, but perhaps the most surprising blockade was the community itself which resisted to becoming involving in the initiative due to the mindset of the locals, despite being an initiative created in partnership by people from their community.

4. Discussion

In the current chapter the discussion of the results described in the previous chapter is presented, as well as the limitations encountered during the process of making the present dissertation. From the previous chapter, it is possible to conclude that in all the case studies, a transition towards sustainability was in some way achieved. In the case of Ciclaveiro, by contributing to the improvement of the image of the bicycle as a means of transportation capable of replacing the conventional means of transportation. With the Santiago's civic laboratory, that meant getting rid of the stigma of the social neighbourhood, as well as educating their community in sustainable practices. As regards the Murtosa's fisherwomen association, it could be seen that due to their efforts, they were able to get the professional status of fisherwomen and equal rights in the fishing profession.

What we can take from these case studies is that even in smaller scales, it is possible for the citizens to organize themselves in order to create an incredibly demanding exercise of citizenship, in order to tackle the different issues that affect their respective communities. And since these exercises can promote social innovation, it is possible to conclude that social innovation can occur at scales of this size, being able to provide solutions to the community's specific problems, solutions that may have a higher chance of being put into practice when compared to the more traditional approaches.

Another observation that can be made by analyzing the case studies is the absence of support from the local government. One explanation for this fact is that these initiatives are "bottom-up" processes. A way to counterpart this is by applying strategies that are able to act as interplay across spatial scales by being able to link institutional initiatives from the government side and active and empowering initiatives from the communities side, that are described by (Baker & Mehmood, 2015) as "Bottom-linked" strategies.

One limitation that can be presented concerning these initiatives in particular is that their success/survivability is closely tied to their respective leaders and that without them, these initiatives would not be able to endure for long periods of time. Another factor that can contribute to this is the structure and organization of the initiatives.

Ciclaveiro is an initiative that has statutes as well as rules of procedures, and in the case of Santiago's civic laboratory, although it was a finite initiative, due to its structure and organization, it has a high level of replicability, while on the other hand, Murtosa's fisherwomen association is not displaying the same level of structure and organization, which might have contributed to the suspension of the initiative.

In terms of limitations of the methodology, the fact that while barriers and drivers that enable transitions towards sustainability were identified, they are concerning only the three case studies, so these results are the result of a small percentage of these types of initiatives on a national scale, so in order to obtain more accurate results, research into higher number of initiatives should be conducted.

There is also the limitation of the number of people interviewed within the different case studies, being pertinent to interview different agents in order to obtain distinct answers from various points of view, including the people within the community that are not a part of the initiatives. Another gap in the research is the absence of the interviews of representatives of the counties in which the initiatives operate, and how they manage the questioning of practices from these initiatives and the relations they maintain with them. Also, further research and development of the questionnaire matrix should be made in order to obtain more detailed and relevant data. Another limitation was the time spent with each of the initiatives. Therefore, more time would be needed in order to obtain a better understanding of the way they operate and thus making it easier to identify their respective blockades and drivers.

5. Conclusion

With this dissertation, it is argued that due to the slow responses of government institutions in regard to sustainability issues, further consideration should be given to grassroots initiatives like the aforementioned case studies and their ability to produce transitions towards sustainability.

Through the analysis of these case studies, it is apparent that the actors that participate in these initiatives have shown that they are not indifferent to the various issues that exist within their communities and therefore should be able to participate in decision-making to a variable degree. By doing so, they can give a positive contribution to the resilience of their communities. This work also attempted to make the links in these types of initiatives and sustainability clearer, thus providing a better understanding on how they can contribute to the promotion of sustainable development as well as to more participatory forms of citizen engagement. In this way, it can possibly lead to new forms of interactions between citizens and public organizations.

In the beginning of this dissertation, the challenging questions to be answered were how the role of actor's knowledge networks like the case studies that were written about in this dissertation can be enhanced in a way that transition processes for sustainability can be enabled, and what their main blockades and drivers are. From researching these case studies and with the interviews conducted, what can be concluded is that each initiative is presented with different challenges in order to contribute to a more sustainable community and by coming together with different ways to tackle specific problems regarding environmental, social and economic aspects, all while not depending on public administration entities, they have proven that normal citizens can influence and make an impact in the society that they live in, utilizing the knowledge they have acquired throughout their lives.

In addition, one may suggest that by being more receptive to these initiatives, local governments can create new alternative strategies to problems in their communities that, in turn, would be better viewed and easily abided by the respective communities. Furthermore, such strategies could possibly be adapted and scaled to other locations.

Further research should be undertaken, namely by increasing the people interviewed, for example people within the community that are not a part of the initiatives, as well as representatives of the governmental side that deal with these initiatives, also applying different methodologies to the one used in this dissertation in order to determine which could present the best results.

So, the main conclusions that can be made in this dissertation are the following:

The development of initiatives such as those illustrated in the case studies allows the promotion of social innovation through the alteration of knowledge and behaviors relevant to sustainability in communities. The development of these initiatives did not always find openness and support mechanisms in local government entities, often acting as sources of blockade. Despite the potential value of these initiatives, their ability to bring about change depends greatly on the ability of leaders to transfer and disseminate their power as well as the structure and organization of the initiatives.

Additionally, communication between similar initiatives reinforces the robustness and durability of innovation and potential transformation. Bridging these initiatives with government agencies can also help strengthen the potential of such initiatives by facilitating the transition towards more sustainable and resilient communities.

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Annex I

RAPID REVIEW TEMPLATE

1. PROBLEM & TRIGGERS FOR DEVELOPMENT	<i>(What problem does the initiative address?)</i>
	<i>(What are the motivations / triggers to act? Who is responsible for starting the initiative?)</i>
2. AIMS & OBJECTIVES	<i>(What are the stated aims and objectives of the initiative?)</i>
3. SCALE (TERRITORIAL, TEMPORAL, DOMAIN)	<i>(When did the initiative start?) If finished how long did it last?</i>
	<i>(Where is it happening and at what scale – local, municipal, regional, national, transnational, multi-regions?)</i>
	<i>(Is it a replication of other initiative or is it expected/likely to be replicated?)</i>
	<i>(What is the focus – sector vs multi-sector? e.g. food, greening, recycling, water, energy, mobility, agriculture)</i>
4. NETWORK OF ACTORS	<i>(Who is involved? What are their roles - e.g. ‘innovator’ / entrepreneur, member, user, citizen, consumer, activist, resident, neighbour, community leader?)</i>
	<i>(Is any agent of change¹ identified? If yes, what was his role?)</i>
	<i>(What strategies and techniques were used to enrol actors?)</i>
	<i>(Which internal decision-making and steering processes does it work with?)</i>
5. ACTIVITIES	<i>(What – type of - activities are being developed?)</i>
6. TRANSITIONS	<i>(Does the initiative promote transitions/transformations towards sustainability? And does the initiative refers to itself as promoting transitions/transformations towards sustainability - How?) And what is the form/shape of such transitions/transformations?</i>
	<i>(How does it respond (or claims to respond) to major societal changes / trends – e.g. ageing population, climate problems, ICT, education and youth?)</i>
	<i>(Have aims, actors and activities changed over time? Why & When?)</i>
7. SOCIAL INNOVATION	<i>(Does the initiative develop, or describe itself as developing, new social practices, new ideas, new models, new policies/programmes, new rules, new social relations, new services and/or new products?)</i>
	<i>(Does the initiative promote, or refer to itself, as a social innovation? Why they consider themselves as social innovation? How it looks like?)</i>
8. REFLECTIONS	<i>(What are the learning lessons of the initiative?)</i>
	<i>(What are the helpers / blockers of the initiative?)</i>
9. FOLLOW UP	<i>(Is there any monitoring system established – and what type of procedures?)</i>
	<i>(Who is responsible for each of the monitoring procedures?)</i>

¹Individuals or a group of individuals driven by their ideals and vision for the world, and ultimately alter actively how others see the world, building a network (Gallen 2010) / Leaders, groups, coalitions and others that can initiate and drive positive changes towards the achievement of a development goal (World Bank 2011) / Systemic intermediary who focuses on support at a strategic level (Van Lente 2003) acting as an agent broker in any aspect of the innovation process between two or more parties (Howells 2006)